TOSHIBA 99TH660

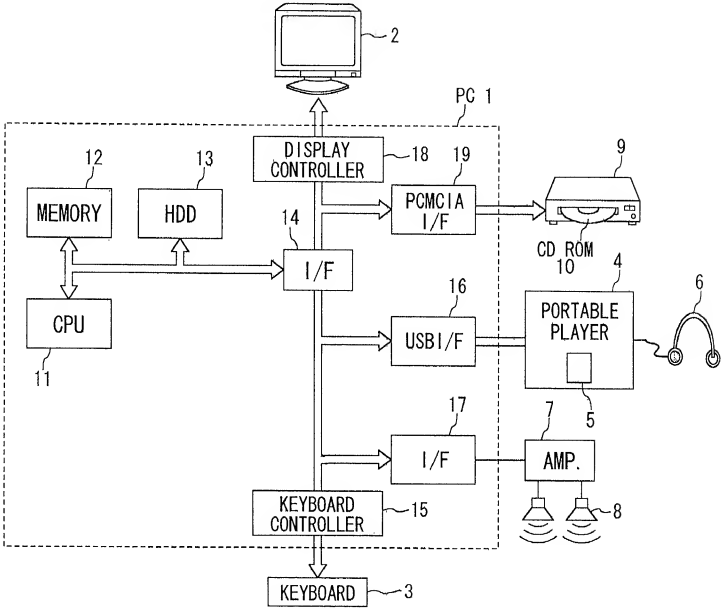


FIG. 1

H1-0110-TH

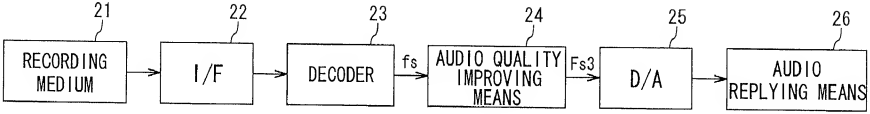

21
RECORDING MEDIUM
22
I/F
23
DECODER
fs
24
AUDIO QUALITY IMPROVING MEANS
Fs3
25
D/A
26
AUDIO REPLYING MEANS

FIG. 2

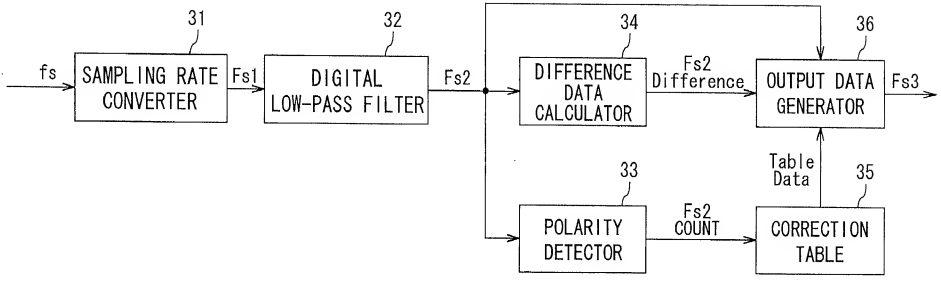

31
32
34
36
fs
SAMPLING RATE CONVERTER
Fs1
DIGITAL LOW-PASS FILTER
Fs2
DIFFERENCE DATA CALCULATOR
Fs2 Difference
OUTPUT DATA GENERATOR
Fs3
Table Data
33
35
POLARITY DETECTOR
Fs2 COUNT
CORRECTION TABLE

FIG. 3

ALGORITHM OF DOUBLE-EXTENDED SAMPLING

INPUT DATA SAMPLED AT RATE = fs	OUTPUT DATA CONVERTED TO RATE=Fs(=2×fs)
m	m
m+1	0
m+2	m+1
m+3	0
.	m+2
.	0
.	m+3
	0
	.
	.
	.

FIG. 4

TOHKEMY 9744660

CORRECTION TABLE A

Fs2COUNT	3(=2Fs)	4(=3Fs)	5(=4Fs)	6(=5Fs)
n=1	0	0	0	0
n=2	1/4(=α)	1/4(=α)	1/4(=α)	1/4(=α)
n=3	–	-1/4(=β)	0	0
n=4	–	–	-1/4(=β)	0
n=5	–	–	–	-1/4(=β)

FIG. 5A

CORRECTION TABLE B

Fs2COUNT	3(=2Fs)	4(=3Fs)	5(=4Fs)	6(=5Fs)
n=1	0	0	0	0
n=2	-1/4(=β)	-1/4(=γ)	-1/4(=γ)	-1/4(=γ)
n=3	–	1/4(=θ)	0	0
n=4	–	–	1/4(=θ)	0
n=5	–	–	–	1/4(=θ)

FIG. 5B

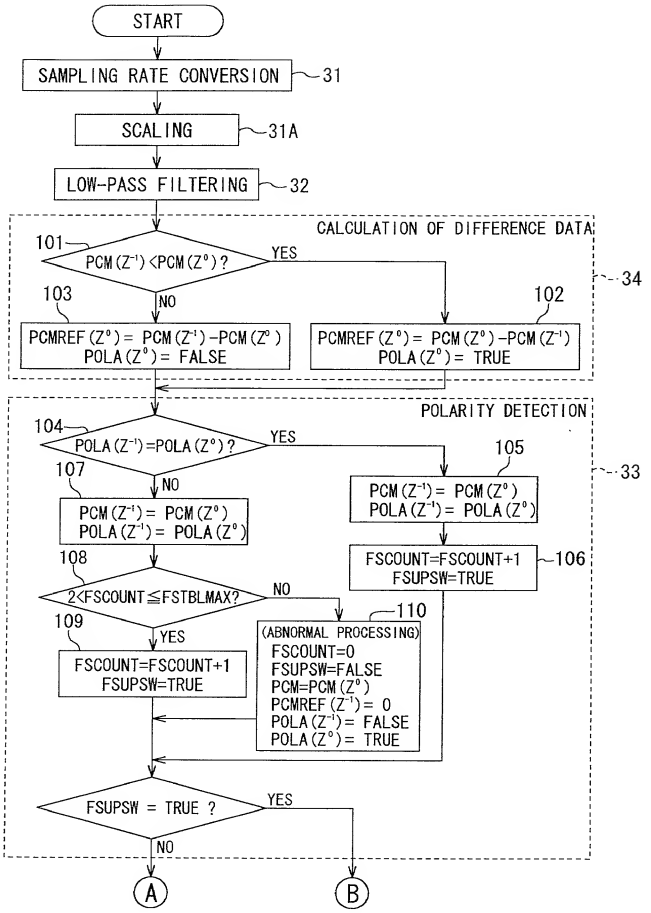

START
SAMPLING RATE CONVERSION
31
SCALING
31A
LOW-PASS FILTERING
32
CALCULATION OF DIFFERENCE DATA
101
PCM(Z⁻¹)<PCM(Z⁰)?
YES
NO
34
103
102
PCMREF(Z⁰)= PCM(Z⁻¹)-PCM(Z⁰)
POLA(Z⁰)= FALSE
PCMREF(Z⁰)= PCM(Z⁰)-PCM(Z⁻¹)
POLA(Z⁰)= TRUE
POLARITY DETECTION
104
POLA(Z⁻¹)=POLA(Z⁰)?
YES
105
33
107
NO
PCM(Z⁻¹)= PCM(Z⁰)
POLA(Z⁻¹)= POLA(Z⁰)
PCM(Z⁻¹)= PCM(Z⁰)
POLA(Z⁻¹)= POLA(Z⁰)
FSCOUNT=FSCOUNT+1
FSUPSW=TRUE
106
108
2<FSCOUNT≦FSTBLMAX?
NO
110
109
YES
(ABNORMAL PROCESSING)
FSCOUNT=0
FSUPSW=FALSE
PCM=PCM(Z⁰)
PCMREF(Z⁻¹)= 0
POLA(Z⁻¹)= FALSE
POLA(Z⁰)= TRUE
FSCOUNT=FSCOUNT+1
FSUPSW=TRUE
FSUPSW = TRUE ?
YES
NO
A
B

FIG. 6

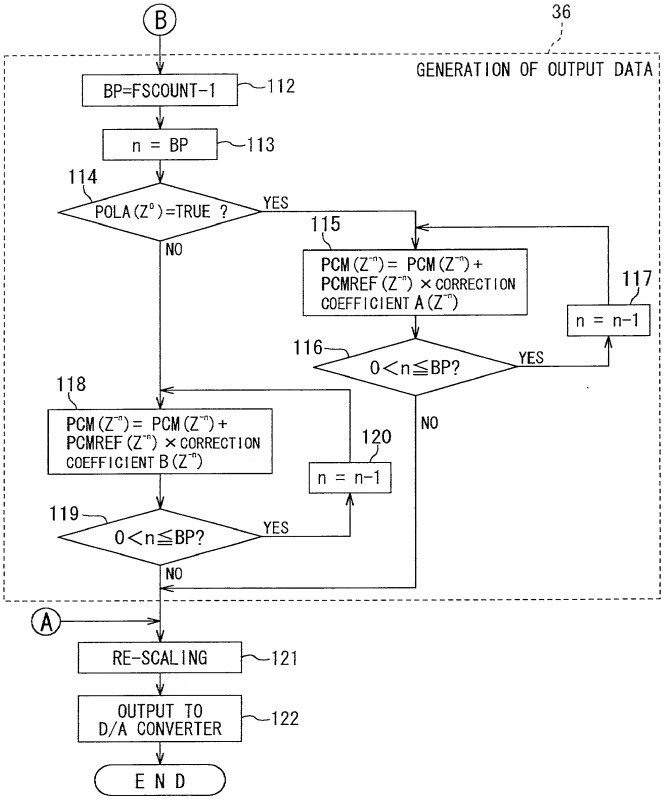
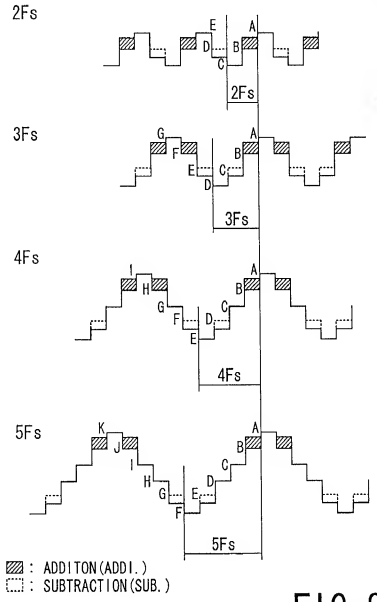

B
36
GENERATION OF OUTPUT DATA
BP=FSCOUNT-1
112
n = BP
113
114
POLA(Z^0)=TRUE ?
YES
NO
115
PCM(Z^-n)= PCM(Z^-n)+
PCMREF(Z^-n) × CORRECTION
COEFFICIENT A(Z^-n)
117
n = n-1
116
0<n≦BP?
YES
NO
118
PCM(Z^-n)= PCM(Z^-n)+
PCMREF(Z^-n) × CORRECTION
COEFFICIENT B(Z^-n)
120
n = n-1
119
0<n≦BP?
YES
NO
A
RE-SCALING
121
OUTPUT TO
D/A CONVERTER
122
E N D

FIG. 7



WHEN CORRECTION VALUES ARE a to d AND VALUES FROM CORRECTION TABLES ARE α to θ :

OUTPUT PCM DATA:

BP=2Fs
a=(ABS(A-B))* α
b=(ABS(C-D))* β
α=1/4, β=-1/4

A=A
B=B+a(ADDI.)
C=C
D=D+b(SUB.)

BP=3Fs
a=(ABS(A-B))* α
b=(ABS(C-D))* β
c=(ABS(D-E))* γ
d=(ABS(F-G))* θ
α=1/4, β=-1/4,
γ=-1/4, θ=1/4

A=A
B=B+a(ADDI.)
C=C+b(SUB.)
D=D
E=E+c(SUB.)
F=F+d(ADDI.)

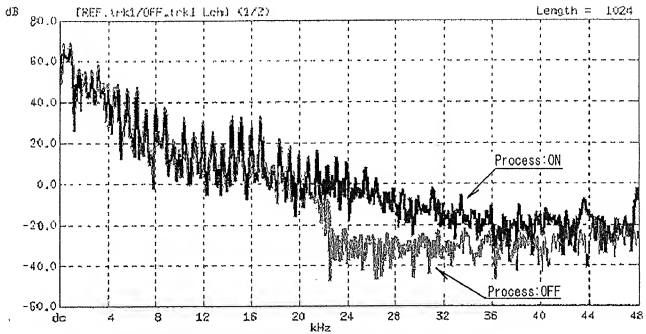
BP=4Fs
a=(ABS(A-B))* α
b=(ABS(D-E))* β
c=(ABS(E-F))* γ
d=(ABS(H-I))* θ
α=1/2, β=-1/2,
γ=-1/2, θ=1/2

A=A
B=B+a(ADDI.)
C=C
D=D+b(SUB.)
E=E
F=F+c(SUB.)
G=G
H=H+d(ADDI.)
I=I

BP=5Fs
a=(ABS(A-B))* α
b=(ABS(E-F))* β
c=(ABS(F-G))* γ
d=(ABS(J-K))* θ
α=1/2, β=-1/2,
γ=-1/2, θ=1/2

A=A
B=B+a(ADDI.)
C=C
D=D
E=E+b(SUB.)
F=F
G=G+c(SUB.)
H=H
I=I
J=J+d(ADDI.)
K=K

FIG. 8



OUTPUT LEVELS OF SPECTRUM ANALYZER

[UPPER(ON) :WITH VOICE-QUALITY IMPROVEMENT PROCESSING
LOWER(OFF):WITHOUT VOICE-QUALITY IMPROVEMENT PROCESSING]

FIG. 9

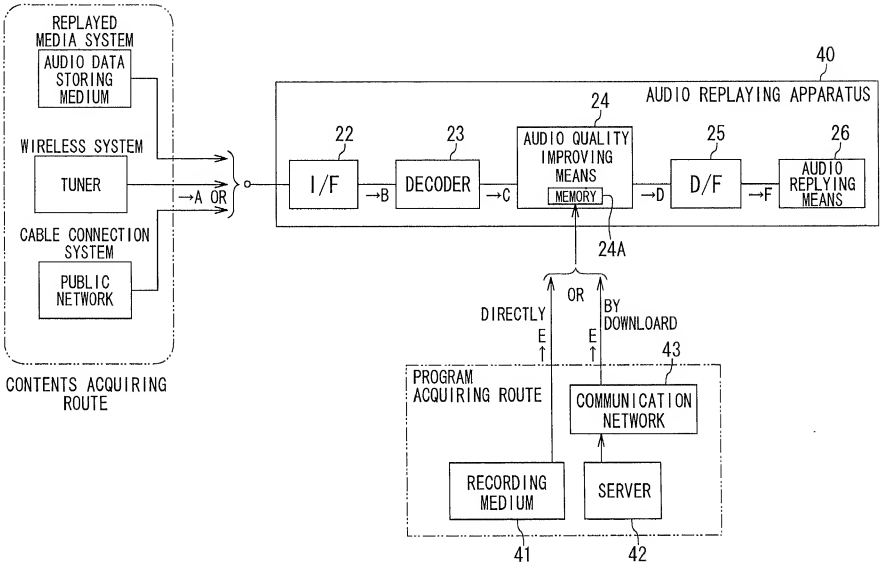

REPLAYED MEDIA SYSTEM
AUDIO DATA STORING MEDIUM
WIRELESS SYSTEM
TUNER
CABLE CONNECTION SYSTEM
PUBLIC NETWORK
CONTENTS ACQUIRING ROUTE
→A OR
40
AUDIO REPLAYING APPARATUS
22
I/F
→B
23
DECODER
→C
24
AUDIO QUALITY IMPROVING MEANS
MEMORY
24A
→D
25
D/F
→F
26
AUDIO REPLYING MEANS
DIRECTLY
E
OR
BY DOWNLOARD
E
43
PROGRAM ACQUIRING ROUTE
COMMUNICATION NETWORK
RECORDING MEDIUM
SERVER
41
42

FIG. 10

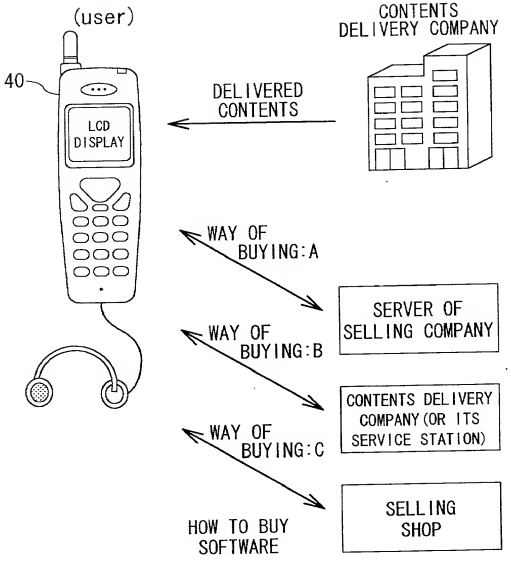

(user)
40
LCD DISPLAY
CONTENTS DELIVERY COMPANY
DELIVERED CONTENTS
WAY OF BUYING:A
SERVER OF SELLING COMPANY
WAY OF BUYING:B
CONTENTS DELIVERY COMPANY (OR ITS SERVICE STATION)
WAY OF BUYING:C
SELLING SHOP
HOW TO BUY SOFTWARE

FIG. 11